NGPN
Technology, Architecture and Protocols for the Next Generation Photonic Core and Metro Networks

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Objective

- Establish criteria for benchmarking different solution for metro and core network (Optical network: "the part of the network in which the optical fiber is the main transmission media")
- Define roadmaps for both transport, control and management systems (with respect to technology, architecture and protocols)
- Identify dependencies and sensitivity of different solutions (what could change the roadmap – what is assumed in the roadmap)
- Identify major cost structures in different solutions (roll-out cost, maintenance cost, scalability cost etc)
- Identify status and stability of standardisation
- Identify possibilities for service support and handling in different solutions and areas of the network
- Avoid myths, be open minded and visionary NOT religious, (e.g. is the future all-packet based??)
Approach

- Benchmark criteria and area definition
- Network technology benchmark and roadmapping
- Network topology and architecture benchmark and roadmapping
- Roadmap(s) towards the next generation core and metro network(s)
- Network protocol benchmark and roadmapping
The flat IP over DWDM network
Functions and technology

High capacity optical transport

High Speed electronic switching

IP-network
Example: Electrical RPR vs. Optical WDM-ring

Simplified add/drop based on wavelength or electronic label
Component dependencies: Optical regeneration – making the optical network digital

3R regeneration of an optical signal

1st R: Reamplification
2nd R: Reshaping
3rd R: Retiming
Logical and physical layering

WDM-SDH-IP
(topology relaxation)

WDM-IP
(1:1 topology)

NGNI meeting 14/2 2002
Mapping of protocols in optical networks

"NOW"

"Future?"

NGNI meeting 14/2 2002

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Dynamics of bandwidth administration

“Now”
Control
Management

“Future?”
Control/Management

IP
ATM
SDH-SONET
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Project status

• Project initiated
• Partners: COM, Telscom, EURESCOM, University of Essex, NORTEL
• No deliverables yet – first one will be on benchmarking criterias
• Work area large - must be characterised and key area selected